

**MONTHLY PROGRESS REPORT #330  
FOR SEPTEMBER 2024**

**EPA REGION I ADMINISTRATIVE ORDERS SDWA 1-97-1019 and 1-2000-0014**

**JOINT BASE CAPE COD (JBCC)  
TRAINING RANGE AND IMPACT AREA**

The following summary of progress is for the period from 01 to 30 September 2024.

**1. SUMMARY OF REMEDIATION ACTIONS**

**Remediation Actions (RA) Underway at Camp Edwards as of 27 September 2024:**

Demolition Area 1 Comprehensive Groundwater RA

The Demolition Area 1 Comprehensive Groundwater RA consists of the removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. Extraction, treatment, and recharge (ETR) systems at Frank Perkins Road, Base Boundary, and the Leading Edge include extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and injection wells to return treated water to the aquifer.

The Frank Perkins Road Treatment Facility has been optimized as part of the Environmental and System Performance Monitoring (ESPM) program at Demolition Area 1. The treatment facility continues to operate at a flow rate of 175 gallons per minute (gpm), with over 3.115 billion gallons of water treated and re-injected as of 27 September 2024. The following Frank Perkins Road system shutdowns occurred in September:

- 1230 on 26 August 2024 due to a power interruption caused by thunderstorms. Power was restored on 28 August 2024, but the VFD panel in the well vault at EW-4 would not power up. BETCO was onsite on 29 August 2024 and determined that the VFD had been damaged beyond repair, possibly from a lightning strike. The new VFD was installed and programmed on 24 September 2024 and the system was restarted at 1035 on 25 September 2024.

The Base Boundary Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 gpm. As of 27 September 2024, over 412.4 million gallons of water were treated and re-injected. The following Base Boundary system shutdowns occurred in September:

- 0108 on 22 September 2024 due to a power interruption and was restarted at 0737 on 23 September 2024.

The flow rate at the Leading-Edge system was increased from 100 gpm to 125 gpm on 26 September 2024 based on regulatory agency concurrence with the 26 September 2024 Demolition Area 1 Extraction Well 5 (EW-5) Optimization presentation. As of 27 September 2024, over 423.1 million gallons of water were treated and re-injected. The following Leading Edge system shutdowns occurred in September:

- 1637 on 20 September due to a pump control fault. The fault was cleared, and the system was restarted at 0849 on 23 September 2024.

The Pew Road MTU was turned off with regulatory approval on 08 March 2021 (formerly operated at a flow rate of 65 gpm). Over 672.9 million gallons of water were treated and re-injected during the RA.

## J-2 Range Groundwater RA

### Northern

The J-2 Range Northern Treatment facility consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The Extraction, Treatment, and Re-infiltration system includes three extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration basin to return treated water to the aquifer.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 27 September 2024, over 2.244 billion gallons of water have been treated and re-injected. The following MTU E and F system shutdowns occurred in September:

- MTUs E and F at 1230 on 26 August 2024 due to a power interruption caused by thunderstorms. When attempting to restart MTU F, the pressure relief valve would not reseal. The pressure relief valve at MTU F was replaced with a 125 psi rupture disk, and MTUs E and F were restarted at 0810 on 04 September 2024.
- MTU E at 0124 on 25 September 2024 due to a “floor sump” alarm which occurred due to a broken camlock fitting on the GAC #3 and #4 influent line. A new ball valve, camlock, and hose were installed, and MTU E was restarted at 0926 on 25 September 2024.

The Northern Treatment Building G continues to operate at a flow rate of 225 gpm. As of 27 September 2024, over 1.891 billion gallons of water have been treated and re-injected. No MTU G system shutdowns occurred in September.

### Eastern

The J-2 Range Eastern Treatment system consists of removal and treatment of groundwater to minimize downgradient migration of explosives compounds and perchlorate. The ETI system includes the following components: three extraction wells in an axial array, an ex-situ treatment process consisting of an ion exchange (IX) resin and granular activated carbon (GAC) media to treat perchlorate and explosives compounds, and three infiltration trenches located along the lateral boundaries of the plume where treated water enters the vadose zone and infiltrates into the aquifer. The J-2 Range Eastern system is running at a combined total flow rate of 495 gpm.

The MTUs H and I continue to operate at a flow rate of 250 gpm. As of 27 September 2024, over 1.891 billion gallons of water have been treated and re-injected. The following MTU H and I system shutdowns occurred in September.

- MTUs H and I were shut down at 0840 on 18 September 2024 to drain GAC vessels #5 and #6 at Unit H and GAC vessels #5 and #6 at Unit I for a carbon exchange on 19 September 2024. After the fresh carbon soaked overnight the systems were restarted at 0742 on 20 September 2024.
- MTUs H and I shut down at 0729 on 25 September 2024 due to a “floor sump” alarm which occurred due to a leaking lid on the GAC #5 vessel at MTU H. The lid was retightened and MTUs H and I were restarted at 0817 on 25 September 2024.
- MTUs H and I shut down at 2216 on 25 September 2024 due to a power interruption and were restarted at 0803 on 26 September 2024.

- MTUs H and I shut down at 2354 on 26 September 2024 due to a power interruption and were restarted at 0745 on 27 September 2024.

MTU J typically operates at a flow rate of 120 gpm. As of 27 September 2024, over 885.6 million gallons of water have been treated and re-injected. The following MTU J shutdowns occurred in September:

- 070 on 01 September 2024 due to a power interruption and was restarted at 0826 on 03 September 2024.
- 2213 on 25 September 2024 due to a power interruption and was restarted at 0803 on 26 September 2024.
- 2354 on 26 September 2024 due to a power interruption and was restarted at 0836 on 27 September 2024.

MTU K continues to operate at a flow rate of 125 gpm. As of 27 September 2024, over 1.015 billion gallons of water have been treated and re-injected. The following MTU K shutdowns occurred in September.

- 0720 on 01 September 2024 due to a power interruption and was restarted at 0845 on 03 September 2024.
- 2354 on 26 September 2024 due to a power supply interruption and was restarted at 0811 on 27 September 2024.

### J-3 Range Groundwater RA

The J-3 Range Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The ETR system includes four extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater and utilizes the existing Fuel Spill-12 (FS-12) infiltration gallery to return treated water to the aquifer.

The J-3 system is currently operating at a flow rate of 255 gpm. As of 27 September 2024, over 1.876 billion gallons of water have been treated and re-injected. The following J-3 system shutdowns occurred in September:

- 2217 on 25 September 2024 due to a power interruption and was restarted at 0850 on 26 September 2024.
- 2354 on 26 September 2024 due to a power interruption and was restarted at 0932 on 27 September 2024.

### J-1 Range Groundwater RA

#### Southern

The J-1 Range Southern Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds. The ETR system includes two extraction wells, an ex-situ treatment process to remove explosives compounds from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Southern MTU has been optimized as part of the ESPM program at J-1 Range Southern. The on-base extraction well J1SEW0001 was turned off with regulatory approval on 31 January

2017 (formerly operated at a flow of 35 gpm), and flow was increased from 90 gpm to 125 gpm at the Leading-Edge extraction well J1SEW0002. The Leading-Edge extraction well continues to operate at a flow rate of 125 gpm. As of 27 September 2024, over 821.7 million gallons of water have been treated and re-injected. The following J-1 Range Southern MTU shutdowns occurred in September:

- 0720 on 01 September 2024 due to a power interruption and was restarted at 0800 on 03 September 2024.
- 2215 on 25 September 2024 due to a power interruption and was restarted at 0920 on 26 September 2024.
- 2354 on 26 September 2024 due to a power interruption and was restarted at 0746 on 27 September 2024.

#### Northern

The J-1 Range Northern Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The ETR system includes two extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Northern MTU continues to operate at a total system flow rate of 250 gpm. As of 27 September 2024, over 1.403 billion gallons of water have been treated and re-injected. No J-1 Range Northern MTU shutdowns occurred in September.

#### Central Impact Area RA

The Central Impact Area (CIA) Groundwater treatment system consists of removal and treatment of groundwater to minimize downgradient migration of explosives compounds and perchlorate. The ETR system includes the following components: three extraction wells, an ex-situ treatment process consisting of an ion exchange resin and granular activated carbon media to treat explosives compounds, and three infiltration galleries to return treated water to the aquifer. The CIA systems 1, 2, and 3 continue to run at a combined total flow rate of 750 gpm. As of 27 September 2024, over 3.731 billion gallons of water have been treated and re-injected. The following CIA system shutdowns occurred in September:

- 0430 on 30 September 2024 at CIA-3 due to a “floor sump” alarm, which was caused by a broken camlock on the GAC#5 influent line. The system remained off for the remainder of the day on 30 September 2024.

## 2. SUMMARY OF ACTIONS TAKEN

### Operable Unit (OU) Activity as of 27 September 2024:

#### CIA

- Source Area investigations
  - Conducted intrusive investigation in P4A4 grids
  - Conducted CSS and BIP demolition operations
  - Conducted annual CSS material sampling
  - Completed intrusive investigations for the 2024 field season

- Demobilized intrusive teams
- Conducted routine visual checks of Consolidated Shot Structure (CSS) soil cover and surface area around the perimeter of the CSS

Demolition Area 1

- The flow rate at Leading Edge EW-5 was increased from 100 gpm to 125 gpm on 26 September 2024.

Demolition Area 2

- No activity.

J-1 Range

- Bag filters changed at J-1 South on 20 September 2024

J-2 Range

- Groundwater sampling within the J-2 North SPM Program.
- Groundwater hydraulic monitoring within the J-2 North SPM Program.
- Carbon exchange at J-2 East MTU H GAC vessels #5 and #6 and MTU I GAC vessels #5 and #6 on 19 September 2024.

J-3 Range

- No activity

L Range

- No activity

Small Arms Ranges

- No activity

Northwest Corner

- No activity

Training Areas

- No activity

Impact Area Roads

- No activity

Other

- Collected process water samples from Central Impact Area, Demolition Area 1, J-1 Range Northern, J-1 Range Southern, J-2 Range Eastern, J-2 Range Northern, and J-3 Range treatment systems

### Project and Fieldwork Update

Darrin Smith (USACE) stated that KGS sampling team is conducting the annual System Performance Monitoring (SPM) event at J-2 North (75 screens) and that is expected to be completed in mid-October. Crews will then begin the annual SPM event at J-1 South (54 screens). The September monthly treatment system sampling results are expected this week.

Mr. Smith (USACE) reported that there was a carbon change out on 9/19/24 at J-2 East H and I based on the August treatment system sampling results. The system was shutdown for that change out from 9/18/24-9/20/24.

Mr. Smith (USACE) reported that the VFD for Demolition Area 1 (Demo 1) EW-4 has been replaced and that system is back online as of this week. There were power outages due to the storms over the weekend, which caused temporary shutdowns at the Demo 1 base boundary (~30 hours) and Demo 1 leading edge (~54 hours) systems. The annual consolidated shot material sampling was performed on 9/17/24 and results are pending.

Gina Kaso (USACE) stated that today is the last day with four teams for this field season. Three are conducting intrusive investigations today and then they will begin to demobilize. The other team is continuing BIP demo operations until 10/3/24 and then they will demobilize. Any items requiring consolidated shots will be placed in the MEC holding area and addressed next field season. The intrusive investigations/digs will resume next field season and crews will complete the remaining work in the selected 50 acres. A figure will be provided to show the remaining areas.

### Document and Project Tracking

Mr. Dvorak (USACE) reviewed the list of deliverables (provided in advance of the meeting).

### Demo 1 Extraction Well 5 (EW-5) Optimization

Michael Kulbersh (USACE) began the presentation and displayed a figure showing the area. He stated that the leading-edge extraction well (D1-EW-5) currently extracts groundwater at 100 gallons per minute (gpm). Mr. Kulbersh (USACE) provided some background information and explained that in January 2020, extraction well D1-EW-5 well was packered so that groundwater was being pumped from the lower 35 ft of the 80 ft well screen, approximately -50 ft MSL to -85 ft MSL. As discussed in a 2019 project note, the extraction well packering was done to capture perchlorate migrating from MW-556M1, which is screened from -103 ft MSL to -113 ft MSL. Under unpackered flow conditions, perchlorate might underflow the extraction well. Post-packering water levels show that the capture zone has expanded both laterally and vertically, such that the vertical capture of the deeper perchlorate lobe would be within the extraction well's capture zone.

Mr. Kulbersh (USACE) stated that in May 2024, perchlorate was detected in well MW-602M1 (-70 to -80 ft MSL) at 4.4 µg/L /4.7 µg/L, respectively. It was not detected in MW-602M2, or in wells MW-604M1/M2 to the south, above the reporting limit (RL). Resampling in June 2024 confirmed these results.

Mr. Kulbersh (USACE) noted that although the model indicates that D1-EW-5 lies within the capture zone, the Extraction Treatment Reinjection (ETR) system has the capacity to treat groundwater up to 125 gpm. He explained that increasing the flow rate from 100 gpm to 125 gpm would ensure that the well is within the capture zone. Mr. Kulbersh (USACE) said that, as a precautionary measure, this increase in the flow rate from 100 gpm to 125 gpm is recommended prior to well shutdown in Fall 2025. A 24-hour test was recently performed to ascertain if the system could handle the increased pumping, treatment and reinfiltration; no issues were noted.

Mr. Kulbersh (USACE) explained that after one year of pumping and the shut-down of D1-EW-5, contamination would track downgradient and pass near existing wells MW-571/MW-582 that are in the chemical monitoring network. It will attenuate below the MMCL before reaching County Road. Preliminary modeling indicates cleanup in Zone 4 possibly increasing from 2029 to 2030/2031, based on recent detections in MW-602M1.

A revised plume shell will be provided in 2028, with data through June 2027.

Elliot Jacobs (MassDEP) said he has no concerns about the proposed increase in pumping. He asked about the potential access issue with the well and Mr. Kulbersh (USACE) said that the well would likely be shut down in Fall 2025, regardless of lease resolution. Mr. Jacobs (MassDEP) then asked if there is an estimate for the travel time from MW-602M1 to D1- EW-5. Mr. Kulbersh (USACE) replied that the particle tracks indicate that the contamination would reach the extraction well within two years. Modeling indicates that after a year of pumping at 125 gpm, much of the contamination mass would be captured. Any contamination that remains after the extraction well shutdown would likely attenuate by 2029/2030.

Mr. Jacobs (MassDEP) and Mr. Fontaine (EPA) concurred with the optimization plan for Demo 1 EW-5 (increased pumping to 125 gpm). The concurrence will also be formally documented in the Demo 1 Environmental Monitoring Report.

### **JBCC Cleanup Team Meeting**

The next JBCC Cleanup Team (JBCCCT) will be held on 13 November 2024. Meeting details and presentation materials from previous meetings can be found on the IAGWSP web site at <http://jbcc-iagwsp.org/community/impact/presentations/>. The Cleanup Team meeting discusses late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The JBCCCT meetings provide a forum for community input regarding issues related to both the IRP and the IAGWSP.

### **3. SUMMARY OF DATA RECEIVED**

Table 1 summarizes sampling for all media from 01 to 30 September 2024. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 01 to 30 September 2024. These results are compared to the Maximum Contaminant Levels/Health Advisory (MCL/HA) values for respective analytes. Explosives and perchlorate are the primary contaminants of concern (COC) at Camp Edwards. Table 3 summarizes the validated detections of per- and polyfluoroalkyl substances (PFAS) for influent and groundwater results analyzed by EPA draft Method 1633 and received from 01 to 30

September 2024. Table 3 PFAS results are compared to the Regional Screening Levels (RSLs) published by EPA in November 2023.

The operable units (OUs) under investigation and cleanup at Camp Edwards are the Central Impact Area, Demolition Area 1, Demolition Area 2, J-1 Range, J-2 Range, J-3 Range, L Range, Northwest Corner, Small Arms Ranges, and Training Areas. Environmental monitoring reports for each OU are generated each year to evaluate the current year groundwater results. These reports are available on the site Environmental Data Management System (EDMS) and at the project document repositories (IAGWSP office and Jonathan Bourne Library).



#### 4. SUBMITTED DELIVERABLES

Deliverables submitted during the reporting period include the following:

- Monthly Progress Report No. 329 for August 2024 11 September 2024

#### 5. SCHEDULED ACTIONS

The following actions and/or documents are being prepared in September 2024.

- Response to Comments on the Five-Year Review
- Final J-1 Range North Environmental Monitoring Report for January 2021 through December 2022 with Plume Shell Technical Memorandum
- Draft L Range Environmental Monitoring Report for March 2023 through February 2024
- Response to Comments on the J-3 Range Environmental Monitoring Report for September 2022 – August 2023 with Plume Shell Technical Memorandum
- IAGWSP Comprehensive PFAS Report
- Response to Comments on the Central Impact Area 2023 Source Removal Report
- Response to Comments on the Draft J-2 Range Eastern Environmental Monitoring Report for November 2022 – October 2022
- Response to Comments on the Draft J-2 Range Northern Environmental Monitoring Report for November 2022 – October 2023
- Draft J-1 Range South Environmental Monitoring Report for January 2023 through December 2023
- Draft Small Arms Range Environmental Monitoring Report for July 2023 through June 2024

**TABLE 1**  
**Sampling Progress: 01 to 30 September 2024**

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	MW-630M1	MW-630M1_F24	MS	09/26/2024	Ground Water	217	227
J2 Range Northern	MW-630M1	MW-630M1_F24	N	09/26/2024	Ground Water	217	227
J2 Range Northern	MW-630M1	MW-630M1_F24	SD	09/26/2024	Ground Water	217	227
J2 Range Northern	MW-632M2	MW-632M2_F24	N	09/26/2024	Ground Water	229.5	239.5
J2 Range Northern	MW-632M1	MW-632M1_F24	N	09/26/2024	Ground Water	254.5	264.5
J2 Range Northern	MW-318M2	MW-318M2_F24	N	09/26/2024	Ground Water	205.8	215.82
J2 Range Northern	MW-318M1	MW-318M1_F24	N	09/26/2024	Ground Water	305.79	315.81
J2 Range Northern	J2EW3-MW1-B	J2EW3-MW1-B_F24	N	09/25/2024	Ground Water	210.66	220.66
J2 Range Northern	J2EW3-MW1-C	J2EW3-MW1-C_F24	N	09/25/2024	Ground Water	245.66	255.66
J2 Range Northern	MW-313M3	MW-313M3_F24	N	09/25/2024	Ground Water	195.07	205.57
J2 Range Northern	MW-313M2	MW-313M2_F24	N	09/25/2024	Ground Water	215.46	225.49
J2 Range Northern	MW-313M1	MW-313M1_F24	N	09/25/2024	Ground Water	255.42	265.42
J2 Range Northern	MW-313M1	MW-313M1_F24D	FD	09/25/2024	Ground Water	255.42	265.42
J2 Range Northern	MW-331M2	MW-331M2_F24	N	09/24/2024	Ground Water	195.27	205.27
J2 Range Northern	MW-331M1	MW-331M1_F24	N	09/24/2024	Ground Water	235.41	245.41
J2 Range Northern	J2EW2-MW3-B	J2EW2-MW3-B_F24	N	09/24/2024	Ground Water	212.65	222.65
J2 Range Northern	J2EW2-MW3-C	J2EW2-MW3-C_F24	N	09/24/2024	Ground Water	246	256
J2 Range Northern	MW-348M2	MW-348M2_F24	N	09/24/2024	Ground Water	206.54	216.54
J2 Range Northern	MW-620M1	MW-620M1_F24	N	09/23/2024	Ground Water	268.6	278.6
J2 Range Northern	MW-619M2	MW-619M2_F24	N	09/23/2024	Ground Water	234.1	244.1
J2 Range Northern	MW-619M1	MW-619M1_F24	N	09/23/2024	Ground Water	255.1	265.1
J2 Range Northern	MW-327M2	MW-327M2_F24	N	09/23/2024	Ground Water	265.01	275.01
J2 Range Northern	MW-327M1	MW-327M1_F24	N	09/23/2024	Ground Water	296.06	306.04
J2 Range Northern	MW-587M2	MW-587M2_F24	N	09/19/2024	Ground Water	220	230
J2 Range Northern	MW-587M2	MW-587M2_F24D	FD	09/19/2024	Ground Water	220	230
J2 Range Northern	MW-587M1	MW-587M1_F24	N	09/19/2024	Ground Water	250	260
J2 Range Northern	MW-631M2	MW-631M2_F24	N	09/19/2024	Ground Water	200.1	210.1
J2 Range Northern	MW-631M1	MW-631M1_F24	N	09/19/2024	Ground Water	233.1	243.1
J2 Range Northern	MW-586M2	MW-586M2_F24	N	09/18/2024	Ground Water	211	221
J2 Range Northern	MW-586M1	MW-586M1_F24	N	09/18/2024	Ground Water	237	247
J2 Range Northern	MW-305M1	MW-305M1_F24	N	09/18/2024	Ground Water	202.82	212.82
J2 Range Northern	MW-322M1	MW-322M1_F24	N	09/18/2024	Ground Water	245.77	255.77
Central Impact Area	SSCIACSL03	JBCC-CLL-03	LR	09/17/2024	Soil	0	0
Central Impact Area	SSCIACSL03	JBCC-CLL-03	LT	09/17/2024	Soil	0	0
Central Impact Area	SSCIACSL03	JBCC-CLL-03	MS	09/17/2024	Soil	0	0
Central Impact Area	SSCIACSL03	JBCC-CLL-03	N	09/17/2024	Soil	0	0
Central Impact Area	SSCIACSL03	JBCC-CLL-03	SD	09/17/2024	Soil	0	0
J2 Range Northern	MW-622M2	MW-622M2_F24	N	09/17/2024	Ground Water	220.4	230.4
Central Impact Area	SSCIACSL03	JBCC-CVR-03	N	09/17/2024	Soil	0	0
J2 Range Northern	MW-622M1	MW-622M1_F24	N	09/17/2024	Ground Water	245.4	255.4
J2 Range Northern	MW-704M2	MW-704M2_F24	N	09/17/2024	Ground Water	217.8	227.8
J2 Range Northern	MW-704M1	MW-704M1_F24	N	09/17/2024	Ground Water	244	254
J2 Range Northern	MW-621M2	MW-621M2_F24	N	09/16/2024	Ground Water	219.4	229.4
J2 Range Northern	MW-621M2	MW-621M2_F24D	FD	09/16/2024	Ground Water	219.4	229.4
J2 Range Northern	MW-621M1	MW-621M1_F24	N	09/16/2024	Ground Water	249.4	259.4
J2 Range Northern	MW-702M2	MW-702M2_F24	N	09/16/2024	Ground Water	208.1	218.1
J2 Range Northern	MW-702M1	MW-702M1_F24	N	09/16/2024	Ground Water	277.5	287.5
J2 Range Northern	MW-703M2	MW-703M2_F24	N	09/09/2024	Ground Water	224.1	234.1
J2 Range Northern	MW-703M2	MW-703M2_F24D	FD	09/09/2024	Ground Water	224.1	234.1
J2 Range Northern	MW-703M1	MW-703M1_F24	N	09/09/2024	Ground Water	248	258
J2 Range Northern	MW-640M2	MW-640M2_F24	N	09/09/2024	Ground Water	216	226
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	MW-640M1	MW-640M1_F24	N	09/09/2024	Ground Water	246	256
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-216A	N	09/09/2024	Process Water	0	0

N = Normal Sample  
FD = Field Duplicate

**TABLE 1**  
**Sampling Progress: 01 to 30 September 2024**

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-216A	N	09/09/2024	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-216A	N	09/09/2024	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-131A	N	09/09/2024	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-131A	N	09/09/2024	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-131A	N	09/09/2024	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-131A	N	09/09/2024	Process Water	0	0
J2 Range Northern	MW-635M1	MW-635M1_F24	N	09/05/2024	Ground Water	265.4	275.4
J2 Range Northern	MW-588M2	MW-588M2_F24	N	09/05/2024	Ground Water	198	208
J3 Range	J3-EFF	J3-EFF-216A	N	09/05/2024	Process Water	0	0
J2 Range Northern	MW-588M1	MW-588M1_F24	N	09/05/2024	Ground Water	238	248
J3 Range	J3-MID-2	J3-MID-2-216A	N	09/05/2024	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-216A	N	09/05/2024	Process Water	0	0
J3 Range	J3-INF	J3-INF-216A	N	09/05/2024	Process Water	0	0
J1 Range Southern	J1S-EFF	J1S-EFF-202A	N	09/05/2024	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-202A	N	09/05/2024	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-202A	N	09/05/2024	Process Water	0	0
J2 Range Northern	MW-289M2	MW-289M2_F24	N	09/05/2024	Ground Water	162	172
J2 Range Northern	MW-289M2	MW-289M2_F24D	FD	09/05/2024	Ground Water	162	172
Demolition Area 1	D1LE-EFF	D1LE-EFF-98A	N	09/05/2024	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-98A	N	09/05/2024	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-98A	N	09/05/2024	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-98A	N	09/05/2024	Process Water	0	0
J2 Range Northern	MW-289M1	MW-289M1_F24	N	09/05/2024	Ground Water	305	315
Demolition Area 1	D1-EFF	D1-EFF-170A	N	09/05/2024	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-170A	N	09/05/2024	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-170A	N	09/05/2024	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-170A	N	09/05/2024	Process Water	0	0
J2 Range Northern	J2EW1-MW1-B	J2EW1-MW1-B_F24	N	09/04/2024	Ground Water	205.82	215.82
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-192A	N	09/04/2024	Process Water	0	0
J2 Range Northern	J2EW1-MW1-C	J2EW1-MW1-C_F24	N	09/04/2024	Ground Water	240.8	250.8
J2 Range Northern	J2EW1-MW1-C	J2EW1-MW1-C_F24D	FD	09/04/2024	Ground Water	240.8	250.8
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-192A	N	09/04/2024	Process Water	0	0
J2 Range Northern	MW-634M3	MW-634M3_F24	N	09/04/2024	Ground Water	170.6	180.6
J2 Range Northern	MW-634M2	MW-634M2_F24	N	09/04/2024	Ground Water	200.6	210.6
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-192A	N	09/04/2024	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-192A	N	09/04/2024	Process Water	0	0
J2 Range Northern	MW-634M1	MW-634M1_F24	N	09/04/2024	Ground Water	305.6	315.6
J2 Range Northern	MW-589M2	MW-589M2_F24	N	09/03/2024	Ground Water	211	221
Central Impact Area	CIA2-EFF	CIA2-EFF-128A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-128A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-128A	N	09/03/2024	Process Water	0	0
J2 Range Northern	MW-589M1	MW-589M1_F24	N	09/03/2024	Ground Water	240	250
Central Impact Area	CIA2-INF	CIA2-INF-128A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-128A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-128A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-128A	N	09/03/2024	Process Water	0	0
J2 Range Northern	MW-585M3	MW-585M3_F24	N	09/03/2024	Ground Water	198.5	208.5
J2 Range Northern	MW-585M3	MW-585M3_F24D	FD	09/03/2024	Ground Water	198.5	208.5

N = Normal Sample  
FD = Field Duplicate

**TABLE 1**  
**Sampling Progress: 01 to 30 September 2024**

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Central Impact Area	CIA1-INF	CIA1-INF-128A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA3-EFF	CIA3-EFF-99A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-99A	N	09/03/2024	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-99A	N	09/03/2024	Process Water	0	0
J2 Range Northern	MW-585M2	MW-585M2_F24	N	09/03/2024	Ground Water	218.5	228.5
Central Impact Area	CIA3-INF	CIA3-INF-99A	N	09/03/2024	Process Water	0	0
J2 Range Northern	MW-585M1	MW-585M1_F24	MS	09/03/2024	Ground Water	240	250
J2 Range Northern	MW-585M1	MW-585M1_F24	N	09/03/2024	Ground Water	240	250
J2 Range Northern	MW-585M1	MW-585M1_F24	SD	09/03/2024	Ground Water	240	250

**TABLE 2**  
**VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS**  
**Data Received September 2024**

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Date Sampled	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
J3 Range	MW-232M2	MW-232M2_F24	61	66	07/25/2024	SW6850	Perchlorate	0.19	J	µg/L	2.0		0.039	0.20
J3 Range	MW-232M1	MW-232M1_F24	77.5	82.5	07/25/2024	SW6850	Perchlorate	0.065	J	µg/L	2.0		0.039	0.20
J3 Range	MW-232M1	MW-232M1_F24D	77.5	82.5	07/25/2024	SW6850	Perchlorate	0.075	J	µg/L	2.0		0.039	0.20
J3 Range	MW-243M2	MW-243M2_F24	84.5	94.5	07/25/2024	SW6850	Perchlorate	0.087	J	µg/L	2.0		0.039	0.20
J3 Range	MW-243M1	MW-243M1_F24	114.5	124.5	07/25/2024	SW6850	Perchlorate	0.15	J	µg/L	2.0		0.039	0.20
J3 Range	MW-295M2	MW-295M2_F24	117	127	07/24/2024	SW6850	Perchlorate	0.081	J	µg/L	2.0		0.039	0.20
J3 Range	MW-295M1	MW-295M1_F24	145	155	07/24/2024	SW6850	Perchlorate	0.12	J	µg/L	2.0		0.039	0.20
J3 Range	MW-359M2	MW-359M2_F24	148.62	158.62	07/24/2024	SW6850	Perchlorate	0.051	J	µg/L	2.0		0.039	0.20
J3 Range	MW-329M2	MW-329M2_F24	150.05	160.05	07/23/2024	SW6850	Perchlorate	1.9		µg/L	2.0		0.039	0.20
J3 Range	MW-329M2	MW-329M2_F24D	150.05	160.05	07/23/2024	SW6850	Perchlorate	1.8		µg/L	2.0		0.039	0.20
J3 Range	MW-329M1	MW-329M1_F24	179.96	189.96	07/23/2024	SW6850	Perchlorate	0.51		µg/L	2.0		0.039	0.20
J3 Range	MW-247M3	MW-247M3_F24	95	105	07/23/2024	SW6850	Perchlorate	0.049	J	µg/L	2.0		0.039	0.20
J3 Range	MW-247M2	MW-247M2_F24	125	135	07/23/2024	SW6850	Perchlorate	0.33		µg/L	2.0		0.039	0.20
J3 Range	J3-MW-1-B	J3-MW-1-B_F24	175.61	185.61	07/22/2024	SW6850	Perchlorate	0.36		µg/L	2.0		0.039	0.20
J3 Range	MW-143M3	MW-143M3_F24	107	112	07/18/2024	SW6850	Perchlorate	0.081	J	µg/L	2.0		0.039	0.20
J3 Range	MW-143M2	MW-143M2_F24	117	122	07/18/2024	SW6850	Perchlorate	0.10	J	µg/L	2.0		0.039	0.20
J3 Range	MW-143M1	MW-143M1_F24	144	154	07/18/2024	SW6850	Perchlorate	0.090	J	µg/L	2.0		0.039	0.20
J3 Range	MW-636M2	MW-636M2_F24	110.5	120.5	07/17/2024	SW6850	Perchlorate	0.064	J	µg/L	2.0		0.039	0.20
J3 Range	MW-653M2	MW-653M2_F24	59.3	69.3	07/17/2024	SW6850	Perchlorate	0.055	J	µg/L	2.0		0.039	0.20
J3 Range	MW-653M1	MW-653M1_F24	147.5	157.5	07/17/2024	SW6850	Perchlorate	0.11	J	µg/L	2.0		0.039	0.20
J3 Range	MW-142M2	MW-142M2_F24	140	150	07/16/2024	SW6850	Perchlorate	0.046	J	µg/L	2.0		0.039	0.20
J3 Range	MW-576M3	MW-576M3_F24	98.9	108.9	07/16/2024	SW6850	Perchlorate	0.047	J	µg/L	2.0		0.039	0.20
J3 Range	MW-576M2	MW-576M2_F24	133.9	143.9	07/16/2024	SW6850	Perchlorate	0.18	J	µg/L	2.0		0.039	0.20
J3 Range	MW-576M2	MW-576M2_F24	133.9	143.9	07/16/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.67		µg/L	0.60	X	0.043	0.20
J3 Range	MW-576M1	MW-576M1_F24	173.9	183.9	07/16/2024	SW6850	Perchlorate	0.12	J	µg/L	2.0		0.039	0.20
J3 Range	MW-155M1	MW-155M1_F24	124	134	07/15/2024	SW6850	Perchlorate	0.28		µg/L	2.0		0.039	0.20
J3 Range	MW-227M3	MW-227M3_F24	65	75	07/15/2024	SW6850	Perchlorate	0.051	J	µg/L	2.0		0.039	0.20
J3 Range	MW-227M2	MW-227M2_F24	110	120	07/15/2024	SW6850	Perchlorate	0.19	J	µg/L	2.0		0.039	0.20
J3 Range	MW-227M2	MW-227M2_F24	110	120	07/15/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20		µg/L	0.60		0.043	0.20
J3 Range	MW-227M2	MW-227M2_F24D	110	120	07/15/2024	SW6850	Perchlorate	0.16	J	µg/L	2.0		0.039	0.20
J3 Range	MW-157M3	MW-157M3_F24	70	80	07/11/2024	SW6850	Perchlorate	0.065	J	µg/L	2.0		0.039	0.20
J3 Range	MW-157M2	MW-157M2_F24	110	120	07/11/2024	SW6850	Perchlorate	0.041	J	µg/L	2.0		0.039	0.20
J3 Range	90MW0054	90MW0054_F24	107	112	07/11/2024	SW6850	Perchlorate	0.17	J	µg/L	2.0		0.039	0.20
J3 Range	90MW0054	90MW0054_F24	107	112	07/11/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.22		µg/L	0.60		0.043	0.20
J3 Range	90MW0054	90MW0054_F24	107	112	07/11/2024	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.6		µg/L	400		0.091	0.20
J3 Range	90MW0054	90MW0054_F24D	107	112	07/11/2024	SW6850	Perchlorate	0.18	J	µg/L	2.0		0.039	0.20
J3 Range	90MW0054	90MW0054_F24D	107	112	07/11/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.25		µg/L	0.60		0.043	0.20
J3 Range	90MW0054	90MW0054_F24D	107	112	07/11/2024	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.7		µg/L	400		0.091	0.20
J3 Range	MW-193M1	MW-193M1_F24	57.5	62.5	07/10/2024	SW6850	Perchlorate	0.061	J	µg/L	2.0		0.039	0.20
J3 Range	MW-198M4	MW-198M4_F24	70	75	07/10/2024	SW6850	Perchlorate	0.18	J	µg/L	2.0		0.039	0.20
J3 Range	MW-198M3	MW-198M3_F24	100	105	07/10/2024	SW6850	Perchlorate	0.23		µg/L	2.0		0.039	0.20
J3 Range	MW-198M2	MW-198M2_F24	120	125	07/10/2024	SW6850	Perchlorate	0.70		µg/L	2.0		0.039	0.20
J3 Range	MW-637M2	MW-637M2_F24	214.1	224.1	07/09/2024	SW6850	Perchlorate	1.7		µg/L	2.0		0.039	0.20

J = Estimated Result  
MDL = Method Detection Limit  
RL = Reporting Limit  
ND = Non-Detect

**TABLE 2  
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS  
Data Received September 2024**

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Date Sampled	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
J3 Range	MW-637M2	MW-637M2_F24	214.1	224.1	07/09/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.41		µg/L	0.60		0.043	0.20
J3 Range	MW-343M1	MW-343M1_F24	214.8	224.8	07/09/2024	SW6850	Perchlorate	0.47		µg/L	2.0		0.039	0.20
J3 Range	MW-250M3	MW-250M3_F24	95	105	07/08/2024	SW6850	Perchlorate	0.067	J	µg/L	2.0		0.039	0.20
J3 Range	MW-250M2	MW-250M2_F24	145	155	07/08/2024	SW6850	Perchlorate	0.18	J	µg/L	2.0		0.039	0.20
J3 Range	90MP0059B	90MP0059B_F24	116.4	118.9	07/08/2024	SW6850	Perchlorate	0.097	J	µg/L	2.0		0.039	0.20
J3 Range	MW-163S	MW-163S_F24	38	48	07/01/2024	SW6850	Perchlorate	4.2		µg/L	2.0	X	0.039	0.20
J3 Range	MW-163S	MW-163S_F24	38	48	07/01/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3		µg/L	0.60	X	0.043	0.20
J3 Range	MW-163S	MW-163S_F24D	38	48	07/01/2024	SW6850	Perchlorate	4.1		µg/L	2.0	X	0.039	0.20
J3 Range	MW-163S	MW-163S_F24D	38	48	07/01/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.1		µg/L	0.60	X	0.043	0.20
J3 Range	MW-193S	MW-193S_F24	32.5	37.5	07/01/2024	SW6850	Perchlorate	0.091	J	µg/L	2.0		0.039	0.20
J3 Range	MW-193S	MW-193S_F24	32.5	37.5	07/01/2024	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.1		µg/L	0.60	X	0.043	0.20
J3 Range	MW-197M3	MW-197M3_F24	60.2	65.2	07/01/2024	SW6850	Perchlorate	0.080	J	µg/L	2.0		0.039	0.20
J3 Range	MW-197M3	MW-197M3_F24	60.2	65.2	07/01/2024	SW8330	2-Amino-4,6-dinitrotoluene	0.067	J	µg/L	7.3		0.038	0.20
J3 Range	MW-197M2	MW-197M2_F24	80.2	85.2	07/01/2024	SW6850	Perchlorate	0.069	J	µg/L	2.0		0.039	0.20
J3 Range	MW-197M1	MW-197M1_F24	120	125	07/01/2024	SW8330	4-Amino-2,6-dinitrotoluene	0.18	J	µg/L	7.3		0.075	0.20

J = Estimated Result  
MDL = Method Detection Limit  
RL = Reporting Limit  
ND = Non-Detect

**TABLE 3**  
**VALIDATED PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) RESULTS**  
**Data Received September 2024**

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Date Sampled	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
Ammunition Supply Point (ASP)	ASP_KTCHN	ASP_KTCHN_F24D	0	0	08/22/2024	E1633DR	Perfluorohexanesulfonic acid (PFHxS)	0.49	J	ng/L	20.0		0.48	1.9
J2 Range Northern	J2N-EFF-F	J2N-EFF-F_AUG24	0	0	08/05/2024	E1633DR	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	14.0		ng/L			2.0	7.8
J2 Range Northern	J2N-EFF-F	J2N-EFF-F_AUG24	0	0	08/05/2024	E1633DR	Perfluoroheptanoic acid (PFHpA)	0.63	J	ng/L	20.0		0.49	2.0
J2 Range Northern	J2N-EFF-F	J2N-EFF-F_AUG24	0	0	08/05/2024	E1633DR	Perfluorooctanoic acid (PFOA)	1.9	J	ng/L	6.0		0.49	2.0
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24-D	0	0	08/05/2024	E1633DR	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	12.0		ng/L			2.0	7.8
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24-D	0	0	08/05/2024	E1633DR	Perfluoroheptanesulfonic acid (PFHpS)	1.2	J	ng/L			0.49	2.0
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24-D	0	0	08/05/2024	E1633DR	Perfluoroheptanoic acid (PFHpA)	0.65	J	ng/L	20.0		0.49	2.0
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24-D	0	0	08/05/2024	E1633DR	Perfluorohexanesulfonic acid (PFHxS)	8.7		ng/L	20.0		0.49	2.0
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24-D	0	0	08/05/2024	E1633DR	Perfluorooctanesulfonic acid (PFOS)	17.0	J	ng/L	4.0	X	0.49	2.0
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24-D	0	0	08/05/2024	E1633DR	Perfluorooctanoic acid (PFOA)	2.9		ng/L	6.0		0.49	2.0
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24	0	0	08/05/2024	E1633DR	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	11.0		ng/L			1.9	7.6
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24	0	0	08/05/2024	E1633DR	Perfluoroheptanesulfonic acid (PFHpS)	1.1	J	ng/L			0.47	1.9
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24	0	0	08/05/2024	E1633DR	Perfluoroheptanoic acid (PFHpA)	0.60	J	ng/L	20.0		0.47	1.9
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24	0	0	08/05/2024	E1633DR	Perfluorohexanesulfonic acid (PFHxS)	9.3		ng/L	20.0		0.47	1.9
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24	0	0	08/05/2024	E1633DR	Perfluorooctanesulfonic acid (PFOS)	16.0	J	ng/L	4.0	X	0.47	1.9
J2 Range Northern	J2N-INF-F	J2N-INF-F_AUG24	0	0	08/05/2024	E1633DR	Perfluorooctanoic acid (PFOA)	2.7		ng/L	6.0		0.47	1.9

J = Estimated Result  
MDL = Method Detection Limit  
RL = Reporting Limit